EAA Chapter 81 Meeting Minutes
Saturday, July 18, 2020

Meeting was called to order at 1000 by President Erik Fjerstad at the Ryan Field meeting room.

Secretary's report: The usual - Minutes approved in 3 1/2 seconds without being read. That's not even the record time!

Treasurer's Report: There was none. We're have faith that Eric Nelson will come back someday and bring the check book with him.

Visitors: John Dale the younger is learning to fly his recently-acquired 1947 Stinson 108-3 Station Wagon. According to John Dale the older, this is a gentleman's airplane with excellent manners; not quick to leave the ground nor to climb, nor to cruise, but very comfortable and with excellent control harmony. It also features exceptional aileron response at relatively low speeds and huge flaps that provide much more drag than lift. Adverse yaw is nearly absent, trim is essential, and it is one of the few single-engine light aircraft of its era (or since) that can carry four real people with their baggage and full fuel and still be under gross. Those Stinson engineers knew what they were doing!
Brian Jones is a new member of Chapter 81 but has belonged to EAA since 1974. Back in the '90s he was building a Rand Robinson KR-2. For those not familiar, the KR-2 is a kit or plans-built side-by-side 2-seater of wood and composite construction, designed by Ken Rand. Typically using a VW Beetle-derived aircraft engine, it is quite efficient, weighing 480 pounds empty and cruising at a claimed 180 MPH on 76 HP. Estimated build time (from a kit) is 800 hours. Carrying 35 gallons of fuel, it has an amazing range of 1,600 miles! Aircraft Spruce still sells the plans and the kit. Welcome to Chapter 81, Brian.

When I joined Chapter 81, I was amazed to find that some of the other members were what I call "the gods of aviation", pilots with incredible knowledge, skills, and history to share with us mere mortals. Clearly in this category is our featured speaker, the amazing John Dale (the older), a man who has forgotten more about aircraft than most of us will ever know, and he hasn't forgotten much! As an example, I read a book in which the

protagonist claimed that, although he was not a pilot, on his first attempt, he successfully pulled off an Immelmann (half-loop finished with a half-roll) in a Consolidated B-24 bomber (which he called a fighter, making his knowledge of aircraft somewhat suspect). I asked John whether he thought that a B-24 could possible do an Immelmann; his reply was that it should be possible, and that he himself had done the same maneuver in a Lockheed C-130 Hercules! But I digress.

Colonel Dale regaled us with tales of his days as Squadron Commander for the only USAF U2 Wing from 1972-1974, here in Tucson, and was the first to have no fatalities and no lost aircraft while he served as Commander. He, and a very few qualified pilots, flew the early, small U-2C, which had 600 square-foot wings and used the Pratt & Whitney J75 turbojet engine on reconnaissance missions up to 8 hours at altitudes above 70,000 feet. Built to be a jet glider (glide ratio about 23:1), with weight-saving a priority, Lockheed used aluminum skins thinner than Cessna uses on the 172! The aircraft was by no means sturdy: a drop of more than 2 feet on landing would damage the landing gear, and an aerodynamic stall at altitude would damage the airframe. At mission altitude, the acceptable airspeed range was a "coffin corner" of only 3 knots: the upper limit is the maximum mach number speed (MMO) where mach tuck may occur causing a dive where the tail comes off, and slower was stall speed, which would likewise result in a dive that destroys the aircraft. Needless to say, it would be impossible to maintain this narrow range of airspeed throughout an 8-hour mission without using the autopilot, which was engaged at 55,000 feet on the way up. Bank angle was limited to 12 degrees and bug turns (using the autopilot) were required. Martin Knutson, Director of Flight Operations for NASA Ames Research Center at Moffett Field, California, was manager of U-2 flight operations starting in 1971. He is quoted as saying that the U-2 is “the highest workload airplane I believe ever designed and built … you’re wrestling with the airplane and operating the camera systems at all times …”. It was so difficult to fly, and especially to land, that only 1 out of 25 pilots who tried to qualify succeeded. Some couldn’t even taxi it! Only 11 pilots qualified in John Dale’s command. The Air Force generally does not forgive pilots for failing to qualify in a new type aircraft, but made an exception for the U-2; they could return to other commands with no black mark on their record. The U-2 had some other unusual flight characteristics: It had bicycle landing gear, with a pair of 250 psi tires in front and solid tail wheels (rated at 35 MPH!) from a warehouse tug. With no differential braking, all ground steering was done with the linked rudder

and steerable tailwheel. The wings were held up by wheeled struts called pogos, which fell off after takeoff. On landing, threshold speed is 80 knots and ground effect keeps the plane floating a long, long time: it takes 1,000 feet to lose one knot! The parachute is not there to slow you down, it is there to push the tailwheel down so you have at least a chance of steering, because the rudder is useless at landing speed. The preferred technique is to roll the tailwheel on first. The idea is to stall within 2 feet of the ground so as not to destroy the landing gear. To accomplish this, a chase car calls the altitude and attitude. The pilot attempts to keep the wings level until ground crew can grab the wing tips, and there are titanium skids on those wing tips in case they cannot. John says that he was able to stop with the wings level twice. He was also the only pilot never to ground-loop the U-2, although he did make a 90 degree (unplanned) turn and "only just barely" left the runway. Acceleration and climb are astounding: the big-block equipped El Camino chase car could not keep up, and the ground roll was 500 feet in 4 seconds if light, 5 1/2 at gross weight. Takeoff power was 85% so as not to spin the tires on the rims before starting the roll. OK, you hot-rod RV pilots, try to imagine this: initial climb is 20,000 feet per minute at an angle of 60 degrees and an airspeed of 160 knots. Pull back to vertical and you still have 120 knots! Cruise at 70,000 feet-plus shows an indicated airspeed of 95 knots, which trues out at 420 knots (this is at power just above idle). Max indicated airspeed at lower altitudes is 240 knots. Although the controls are very light at speed, they are extremely heavy when slow. The pilot wears a partial-pressure suit because the cockpit was only pressurized to 29,000-32,000 feet (remember that lightweight construction) and there is no room for a full-pressure suit. OK, time to come down. 5 things to remember, but first remember this: you can't put the nose down (hard to fly without a tail)!

1. Open the bleed valves.
2. Gear down.
3. Speed boards down.
4. Vernier dial down engine power setting.
5. Fart like crazy to inflate your pressure suit!

Now, you might think that putting down the gear and the speed boards would slow the aircraft down rapidly, and you would be wrong; there's almost no air up there to create drag. You just pull off all the power you can (jet engines make considerable thrust at idle) and wait until it starts to descend.

Other interesting items: John showed us the gloves from a partial-pressure suit and a slightly-used wingtip titanium skid he nearly burned off during a cross-wind landing. He also had a chart used for calculating oxygen pressure. Lockheed provided a wood stick with a notch at one end to pick up the rudder pedals so you could move your legs a little during that 8-hour mission, and a swab at the other end, initially for oil, and later for wiping frost off the canopy. No fuel gauge; instead a “liquidometer”. Tony LeVier, the test pilot for the Lockheed P-38 Lightning, was also test pilot for the U-2, which is still being flown, although there is a later version (U-2R or S) which is quite different: 1,000 square feet of wing (vs 600) and spoilers to cut lift, much bigger and sturdier (and heavier), more powerful GE F118 turbofan engine, able to pressurize to 15,000 feet and the pilot wears a full-pressure suit. The later models also had a lower threshold speed of 75 knots and missions could be increased to 15 hours. Bail-out height for the U-2C was 800 feet, so punching out was not an option if a takeoff or landing went sideways (pun intended). Navigation was of the celestial variety, using a sextant. At 73,000 to 74,000 feet, the view sight was incredibly accurate, never off by more than 40 feet! The Cessna 310 chase plane was called the “Me-2”. The average age of surviving U-2s is 27,000 hours, and one has been rebuilt 3 times.

Wow. Somehow, the meeting went on after that blockbuster presentation.

Old News: The Cessna 140 donated to Chapter 81 is now in the Chapter Hangar. The Keown (pronounced cow-in) brothers Dan and Jim are willing to be project managers for its mechanical restoration (to begin as soon as things cool down a bit). We have all the log books, which Vice President Steve Horton, A&P Supreme, will go over with a fine-tooth comb to make sure that everything is kosher and all the ADs (Airworthiness Directives) and SBs (Service Bulletins) were complied with. Items of interest include a too-short prop, and that the wings are all-fabric. The engine is an electric-start Continental C-85 with “several hundred” hours on it SMOH (since major overhaul). The door frame structures are cracked and the landing gear box has been repaired twice. The donor had planned to repair and clean up these issues during a planned restoration, but has given us the opportunity instead. Chapter 81 owns it as a project but EAA will not allow us to own a flying airplane once the test flights are done. When the chapter disposes of the airplane, it must receive fair market value for it, or it can donate it to another 501c3 organization. Our members could start a flying

club (independent of the chapter) and purchase and operate the aircraft; or the chapter could raffle or auction the aircraft off as a fundraiser.

New Business: The WASP Project. Edith Baugh Upson Smith, Class 44-W-7 WASP (Women Air Force Service Pilots) currently lives in Green Valley and is about to celebrate her 99th birthday. Friends are requesting an aircraft fly-over in August. President Fjerstad spoke with the CAF (Commemorative Air Force) and has the name of the ops officer and chief pilot. They have a B-25 and B-17 on tour, but an AT-6 Texan might be available. John Dale will try to contact Davis-Monthan AFB for a possible C-130 and/or A-10 Thunderbolt (Warthog) fly-over. After consideration of the options, and issues (permits, noise, logistics, etc.), the current plan involves GA aircraft overflying in loose formation on her birthday (Sunday, 30 August). The Arizona 99s will lead the effort and interested chapter members can join in. Contact Erik (chapter president - president81@eas81.org).

Larry Wilson is doing final assemble of his Zenith CH-701 at the Chapter Hanger and invites us to come take a look. He is close to engine start, and is in the process of making arrangements for a DAR visit for his certification inspection.

Meeting was adjourned at 1135.

Respectfully Submitted by
Secretary Bob Miller